

REMARKS

Claims 1 to 15 were previously pending. Upon entry of the present amendment, claims 1 to 20 are pending in the application. No claims have been canceled, and new claims 16 to 20 have been added. No new matter has been introduced by the foregoing amendment.

Reconsideration is respectfully requested in view of the foregoing amendment and the following remarks.

The specification has been amended to insert headings introducing various paragraphs of the specification, in response to the objection to the specification.

To briefly recap, the present invention relates to electrocoat materials which comprise bismuth compounds but which do not possess prior art disadvantages, but instead allow the bismuth compounds to be incorporated simply and stably into the electrocoat material, where the electrocoat materials prepared from these compounds exhibit very good leveling free from surface defects.

Surprisingly it was found that the electrocoat materials of the invention were easy to prepare, were stable on storage, featured an optimum particle size of the dispersed constituents, and possessed very good filterability. Their electrophoretic deposition on electrically conductive substrates was easy and trouble-free. The resultant electrocoats were free from surface defects due to inhomogeneities while at the same time affording outstanding corrosion protection and edge protection, as shown in the examples on pages 19 to 26 and, specifically, with respect to the surprising results, pages 25 to 26.

1. Rejection of claims 1-15 under 35 U.S.C. §112, first paragraph.

The Examiner states that the specification, while being enabling for (i) a composition containing a binder comprising a cationic group and/or a potentially cationic group or an anionic group and/or a potentially anionic group; and (ii) the electrophoretic deposition of the composition, does not reasonably provide enablement for the breadth of the claims.

The above amendments are believed to obviate this rejection, which includes amending claim 1 as suggested by the Examiner. The Applicant thanks the Examiner for the constructive suggestion, which avoids the present claims covering a binder having both a cationic and an anionic group.

2. Rejection of claims 1-15 under 35 U.S.C. §103(a) as being unpatentable over Klein (US 5,965,000) in view of Ikenoue et al. (US 6,730,203 B2).

The Office Action states that Klein is directed to a concentrate containing cathodically depositable binders, optionally one or more crosslinking agents, and one or more pigments. The Office Action further states that the concentrate comprises cationic binders and bismuth catalyst of aromatic acids, wherein aminoepoxy resins having a primary hydroxy group are one of the binder resins, and the resins may be self-crosslinking or mixed with known crosslinking agents, including a blocked polyisocyanate. The Office Action further states that Klein discloses that the bismuth catalyst may be in a dispersed phase, finely divided. Ikenoue et al. (hereafter "Ikenoue") is cited for teaching a coating method in which the cationic resin comprises a hydroxyl group.

This rejection is respectfully traversed. Klein actually uses, in all the examples of an electrocoat composition, a bismuth salt of an aliphatic carboxylic acid, namely bismuth dimethylolpropionate bishydroxide in the examples, which compound is water-soluble and bears no predictable or obvious relationship to bismuth subsalicylate. As stated on page 1, line 26, to page 2, line 9, of the present specification, readily available salts of aliphatic acids such as bismuth octanoate and bismuth neodecanoate, for example, give rise to defects as a result of oily exudations when used in cationic binders.

Furthermore, the catalytic activity of bismuth compounds can vary. Even more telling is the number of patents, cited on pages 1 to 3, of the present specification, which actually use or mention aliphatic carboxylic acids such as dimethylpropionic and make no mention of bismuth subsalicylate. Hence, the skilled artisan would have no reason to expect that the use of bismuth subsalicylate would provide comparatively good results, let alone superior results, in any particular electrocoat composition. One might reasonably suppose that particles of an insoluble bismuth compound might very well create surface defects or other inhomogeneities in the coating.

While Klein mentions, in column 6, the possibility of using “bismuthates, and/or in the form of organic bismuth complexes and/or as bismuth salts of organic carboxylic acids,” including acetylacetone ligands, Klein states with particular emphasis that, “The bismuth salts of aliphatic hydroxycarboxylic acids are particularly suitable.” [Emphasis added, Column 6, lines 43 to 44 of Klein.] Furthermore, Klein states. “The compound is preferably at least partially water-soluble; it is particularly preferably water-soluble.” [Column 6, lines 53-55.] Nowhere does Klein mention the possible adverse affects of a bismuth salt on leveling and surface defects in the coating.

Furthermore, with respect to new claim 16, Klein requires 35 to 50 wt. % solids, which is defined in col.4, lines 30-32, as “between 35 and 50 wt.%.” In contrast, claim 16 is limited to 5 to 35% by weight solids. In fact, the example in the present specification comprises 20 wt.% solids, compared to 65 wt.% in the example in Klein. This may very well have influenced Klein's need for a water-soluble bismuth compound, since it is well known that the stability of a composition may decrease with increasing weight percent solids.

Furthermore, Klein is directed to a storage stable concentrate and shows, by way of comparison, that cathodic electrocoating compositions that have a lower viscosity (62 and 284 MPa·sec) was not stable in storage without constant stirring. [Claim 1 and Example 2 of Klein, particularly Column 9, lines 29-33.] Thus, there is no reason to expect that one would use particles of a bismuth subsalicylate in a non-concentrate, such as a 20% solution as exemplified in the present invention. Finally, with respect to new

claims 19 and 20, there is no teaching in Klein to use a grinding resin in addition to a cationic binder.

Ikenoue further underscores the unobviousness of the present invention. Ikenoue states that a bismuth-containing compound can be used in a cationic electrodeposition coating composition. However, the very long list and description of such compounds, in column 6, lines 38, to Column 8, line 18, once again points to compounds comprising an aliphatic carboxylic acid, particularly in lines 50-60. The Examples in Ikenoue use bismuth hydroxide (col. 24, line 52). Hence, Ikenoue cannot correct the deficiencies of Klein.

3. Rejection of claims 1-15 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 4, 7-14, 16 and 18 of copending Application No. 11/416,909.

Applicants thank the Examiner for pointing out the potential obviousness-type double patenting issue between the claims of the present application and copending Application No. 11/416,909. In view of the possibility that claims in the cited application or the present application will be further amended before allowance, Applicants will defer responding to this provisional rejections until claims in the reference application are allowed, claims in the present application are otherwise allowable, and it is determined whether these provisional rejections becomes an actual rejection.

4. New Claims.

New claim 16 includes the limitations of original claim 1 and dependent claims 2, 3, 6, 8, and 11. Furthermore, new claim 16 recites A composition, which is 5 to 35% by weight solids, comprising: (A) at least one binder comprising at least one group that is a potentially ammonium cationic group or ammonium cationic group, which is at least supported on page 5, line 19, and page 7, line 25. The new claim 17 recites that the composition is the product of combining a dispersion comprising the binder and crosslinking agent with a pigment paste comprising bismuth subsalicylate compound that has been mixed and milled with pigment, which is at least supported on page 24, lines 19 to 26. and page 25, lines 11 to 20. New claim 18 recites that the composition comprises bismuth salt "consisting of the bismuth subsalicylate compound, which is inherent in the

original claims as well as the present examples. Claims 19 and 20 require a grinding resin that is an epoxy-amine adduct that is mixed and milled with the pigment and bismuth subsalicylate, which is at least supported on page 23, lines 13 to 26, and page 24, lines 19 to 25.

CONCLUSION

Applicants respectfully submit that the Application and pending claims are patentable in view of the foregoing remarks. A Notice of Allowance is respectfully requested. As always, the Examiner is encouraged to contact the Undersigned by telephone if direct conversation would be helpful.

Respectfully Submitted,

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